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Emotional Attitudes and Direct Communication in the Families of Schizophrenics:
A Cross-National Replication

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To examine how the measure of expressed emotion relates to family life, 30 relatives of schizophrenic patients were assessed for EE and then observed in ten-minute discussions with the patients. It was found that high-EE relatives express more negative emotional statements than low-EE relatives when face-to-face with the patient; they also talk more rapidly, and this speech rate is correlated with the patient speech rate. Whereas low-EE relatives expressed few criticisms or intrusive statements, high-EE over-involved relatives were more intrusive, and high-EE critical relatives were more critical as well as more intrusive in direct interaction. These findings emphasise the importance of understanding divergent EE sub-styles and the complementary behaviour of patients. The findings of an earlier Los Angeles study were replicated.

Over the last decade, evidence has been accumulating that the family emotional atmosphere to which schizophrenic patients return from hospital, as indexed by expressed emotion (EE), critically affects the likelihood of relapse from schizophrenia (Vaughn & Leff, 1976*a*; Leff & Vaughn, 1981; Vaughn *et al*, 1984), and that interventions directed at changing EE reduce this risk (Leff *et al*, 1982, 1985).

In another experimental trial, Falloon *et al* (1985) have shown that psychosocial interventions, aimed at improving communication skills and problem-solving behaviour in families at risk, reduce the likelihood of relapse and improve the patient's social functioning. These changes are significantly related to the style of direct affective expression, as indexed by affective style (AS) (Doane *et al*, 1985, 1986).

Most recently, Hogarty *et al* (in press) examined the additive effect of two different treatment methods to maintenance antipsychotic medication: psychoeducational family treatment and individual social skills training. Of the 90 patients who stayed in treatment, the medication comparison group had a relapse rate of 41%, whereas the group that received both family and social skills training had a relapse rate of 0%, at one year follow-up. Furthermore, from measurements of EE at intake and one year follow-up. Hogarty *et al* found that there were no patient relapses in any household that changed from high to low EE independent of treatment; in households that stayed high EE, only the combination of family therapy and social skills training prevented relapse.

Thus, both naturalistic and treatment studies suggest the importance of EE and AS as key indices of family processes. The primary aim of the current study was to examine the relationship between these two measures, to see how EE attitudes were expressed in direct interaction with the patient. It focused particularly on the differences between high-EE relatives with critical and over-involved attitudes.

Previous studies of the interactional correlates of EE attitudes in relatives of schizophrenics have assessed direct communication by a relative to a patient, but only in the presence of an interviewer (Kuipers *et al*, 1983) or a second relative (Miklowitz *et al*, 1984). It is possible, however, that the presence of others can suppress the expression of high-EE attitudes. For instance, one parent in a triadic discussion may dominate the discussion such that the other parent says very little, thus making it difficult to assess their individual styles of emotional expression. Alternatively, the presence of another relative can modify the way they express themselves to the patient. For instance, Valone *et al* (1983) studied the correlates of EE in dyadic and triadic interactions between parents and their non-schizophrenic adolescent offspring. They found that parents often altered the number and harshness of their criticisms when interacting with their child in the presence of their spouse compared with their behaviour when alone with the offspring. The current study overcomes such problems, by studying dyadic communication between patient and relative.

A second aim of the current study was to compare

the expression of emotional attitudes in Britain and the United States. The recent cross-national replication of the British relapse studies (Vaughn *et al*, 1984) demonstrated that relapse in a US sample was predicted by similar levels of criticism and emotional over-involvement as found in the earlier British studies, suggesting that the attitudes of relatives have a similar impact on patients in the two countries.

However, this still leaves the question of whether the crucial mediating mechanism of intrafamilial behaviour is comparable in samples from the two countries. Miklowitz *et al* (1984) demonstrated a correspondence in a US sample between EE and AS, finding that relatives with critical attitudes were more critical in direct interaction and relatives with over-involved attitudes were more intrusive. However, because of different cultural norms in the expression of emotion, it may be that the overt expression of attitudes, particularly negative ones towards one's offspring or spouse, varies from country to country. We aimed to compare results from this British sample with data from previous US studies of EE correlates, to determine whether such cross-national variations exist.

Method

Participants

The sample was selected from recent admissions to Friern Hospital, a psychiatric hospital in North London. All files of patients admitted to acute admission wards were reviewed regularly for two years. Patients were selected for screening if: (a) they had lived with a partner or one or both parents for at least one month out of the previous three; (b) they were likely to be diagnosed as having schizophrenia, and (c) they had been admitted for the first time within two years of the current admission date. Patients were excluded if they showed evidence of an organic brain syndrome, or significant alcohol or drug abuse.

Prospective participants were given the Present State Examination (PSE). The clinicians had been previously trained to reliability on the rating of symptoms. All patients were interviewed within the first few weeks of admission (median = 12 days). If patients met criteria for a positive diagnosis of schizophrenia according to the PSE, the relatives were asked if they would consent to participate in the study. There were two exceptions, each of whom had one first-rank symptom which would have led to a positive diagnosis of schizophrenia according to the CATEGO program, but who presented a clinical picture of a manic psychosis; these were excluded from the trial. Of the sample of 24 patients who passed these initial screening procedures, one set of parents refused, and one family was not approached because it was already too involved with mental health services. The remaining 22 families agreed to participate. There were no further drop-outs from the study.

Of the 22 patients with a positive diagnosis of schizophrenia who were included, 21 met CATEGO criteria for schizophrenia on the basis of the presence of first-rank symptoms from Schneider's 'nuclear syndrome' of schizophrenia. The other participant showed delusions and auditory hallucinations, which fit the CATEGO criteria for 'paranoid psychosis.'

Additional historical data, independently collected, enabled diagnoses to be made on the basis of DSM–III (American Psychiatric Association, 1980). All of the patients satisfied criteria for a diagnosis of schizophrenia except one, whose symptom pattern suggested the possibility of a schizo-affective disorder.

The sample was from a relatively acute psychiatric population. This was the first admission for 59% of the sample, and the mean number of previous admissions was 0.73 (s.d. = 1.24), all of which had occurred within the previous two years. Most had lived continuously with their close relatives for the previous three months: a mean of 85 days out of 90 (s.d. = 16 days).

The sample was heterogeneous for age, gender, ethnicity, and socio-economic status: 8 were female and 14 male; 12 were British caucasians, 5 West Indian, 3 continental European, and 2 of mixed ethnic origin. The mean socio-economic status was 'unskilled' according to the UK Registrar General's classification (Office of Population Censuses and Surveys, 1980). Some had been students or had semi-skilled jobs prior to admission, but most were unemployed: the mean length of unemployment was 12 months out of the previous 24 (s.d. = 10 months). The mean age was 24.6 years, ranging from 18 to 51. The two oldest patients had experienced long-standing encapsulated delusions, but the families and patients had adapted to these with few problems, and they had not sought psychiatric treatment. They were admitted to hospital only when other psychotic symptoms appeared.

Medication levels were obtained from charts and converted to chlorpromazine dose equivalents (Davis, 1976). The mean dose at the time of the initial PSE was 371 mg, and at the time of the direct interaction task was 328 mg.

The 30 relatives had a wide range of socio-economic statuses: the mean occupational level was social class III (M), 'skilled manual workers', which was higher than that of the patients. Most of the relatives were parents: eight patients lived with both parents, eight lived alone with their mothers, and two alone with their fathers. Four patients lived with a partner: three with husbands and one with a wife. The mean age of the relatives was 50.2 years, ranging from 28-71 years.

Camberwell Family Interview

To elicit and measure EE attitudes, key relatives were administered the modified Camberwell Family Interview (CFI) according to the procedures of Vaughn & Leff (1976*b*). This interview was conducted at home, while the patient was in hospital; it was administered separately to each relative, a median of 26 days after intake.

The tapes were rated by clinicians extensively trained at the Institute of Psychiatry to rate EE; most were rated by two people. Five aspects of the relative's attitude were assessed: the number of critical comments (CC), the number

of positive remarks, the presence or absence of hostility, and ratings of emotional over-involvement (EOI) and warmth on six-point scales. A sample group of tapes classified by two raters into high and low EE showed agreement for 12 of the 13 tapes. Individual scale Pearson product-moment correlations were as follows: CC, $r=0.86$ ($P<0.01$); EOI, $r=0.94$ ($P<0.01$); hostility, $r=0.67$ ($P<0.02$). A further seven tapes which were rated by two raters for warmth and positive remarks had Pearson correlations of 0.74 ($P<.05$) and 0.86 ($P<0.01$) respectively.

Classification

Relatives were classified as high EE if they made six or more critical comments or had a rating of three (moderately high) or more on emotional over-involvement. All other relatives were classified as low EE. These criteria are the same as used in recent EE research (Leff *et al*, 1985; Miklowitz *et al*, 1984). Using these criteria, 23 relatives were classified as high EE and 7 as low EE. This is a higher proportion of high-EE relatives than was reported in Camberwell (Vaughn & Leff, 1976*a*) and may reflect subculture variation.

The high-EE group was further divided into three subgroups:

(a) critical group ($n=14$): those relatives scoring high on CC but low on EOI (using the same criteria as above)
(b) emotionally over-involved group ($n=5$): those relatives high on EOI but low on CC
(c) critical and emotionally over-involved group ($n=4$): those relatives high on both CC and EOI.

Ten relatives were rated as showing hostility; in every case they also made six or more CCs, confirming previous work (Vaughn & Leff, 1976*a*).

Relatives' EE status was examined in relation to family type. There were no significant differences in the percentages of low and high-EE relatives among single-parent, dual-parent, and spousal family units, and none in the percentages of low and high-EE relatives between mothers and fathers. There were also no significant differences across the EE subgroups. It was observed, however, that seven out of nine relatives with high EOI scores were mothers. The distribution of the four spouses across the EE categories did not differ markedly from the distribution of parents: one was low EE and three were high EE, two of these being critical and one emotionally over-involved.

Because eight patients were living with more than one key relative, a second classification was used for analyses by family unit rather than by individual relatives. If both parents were low EE, the family was considered dual low EE ($n=4$); if one was high EE and the others low EE, the family was considered mixed EE ($n=3$); if both were high EE, the family was considered dual high EE ($n=15$). All family units, whether of one or two relatives, could thus be classified as uniformly low, uniformly high, or mixed EE.

To determine whether there were differences in EE which related to characteristics of the sample, demographic variables were compared between high EE and low combined with mixed EE families. There were no differences for any of these variables.

Direct family interaction procedures

After the individual assessment of patient and relatives, a meeting was convened to assess face-to-face family interactions. This usually took place shortly before the patient was discharged, and was usually in the hospital, but sometimes at home. The median length of hospital stay was 42 days, and the median time to the interaction meeting 40 days.

The direct interactional task was a discussion between the patient and each relative separately about an issue of conflict; further details of the procedure are described in Miklowitz *et al* (1984). The relative and patient were left to discuss the issue on their own, while the research worker monitored the conversation from another room and returned after ten minutes. The researcher would only return before that time if conversation stopped. Another topic would then be introduced, until a total of ten minutes' discussion had taken place. Whether the relative or patient cue was used as the first stimulus was randomised.

Immediately after these discussions, the clinician held a short debriefing session to answer questions, and to defuse any conflicts which might have arisen.

Direct interaction coding

Transcripts of the interactions were made and checked carefully before being sent to the UCLA Family Project for coding. A critical incident system of coding—the affective style (AS) coding scheme (Doane *et al*, 1981)—was used. These codes are defined briefly below.

Benign criticisms are circumscribed, matter-of-fact, or directed towards specific incidents or sets of behaviour.

Harsh criticisms is a category made up of several subcategories: 'Personal criticisms', in which criticism is made of broad classes of behaviour, or the patient's basic negative character; 'Guilt induction', in which the relative conveys that the patient is to blame for some event which has distressed the relative; and 'Critical intrusiveness', in which the relative implies knowledge of the patient's internal states and is critical of his intentions.

Neutrally-intrusive statements imply knowledge of the patient's emotional states, ideas, or preferences when there is no apparent basis for such knowledge (e.g. "You went out for a drink because you were upset."). These statements are neutral in tone, and do not imply criticism, but might be experienced by patients as intrusive and stressful.

Support: the relative conveys that he or she feels genuine concern for the patient or about the patient's problems or behaviour, or supports the patient in other ways (e.g. "I know of nobody who makes more of an impression on others than you do.").

Reliability

The interaction transcripts were coded by two coders, blind to EE status. Inter-rater reliability was established prior to the present study on a sample of 27 transcripts from an earlier study of families containing a nonpsychotic adolescent; it was highly significant for benign criticisms ($k=0.85$, $P<0.0001$), harsh criticisms ($k=0.89$, $P<0.0001$),

neutral-intrusive statements ($k=0.85$, $P<0.0001$), and support ($k=0.86$, $P<0.0001$).

AS profile patterns

In addition to analyses of means, analyses were made on a case-by-case basis, and a profile method was designed to parallel the EE profiles. Previous studies have assigned a negative AS profile to relatives who express six or more neutral intrusions or one or more personal criticisms, guilt-inductions, or critical intrusions (e.g. Doane *et al*, 1985). However, intrusive profiles and critical profiles have not been separately defined. Since Valone *et al* (1983) showed that benign criticisms also were related to high-EE attitudes, relatives were assigned a 'critical' AS profile if they had at least one personal criticism or an excessive use (six or more) of the less impactful code of benign criticisms. They were assigned as 'intrusive' AS profile if they had at least one guilt induction code (which has an intrusive quality) or an excessive use (six or more) of the less impactful code of neutral intrusions. Some relatives met both criteria; those who met neither were assigned a 'good' AS profile.

Referrals

Eleven high-EE families were subsequently included in a randomised trial of educational, pharmacological, and psycho-social interventions, comparing a group for relatives with in-home family therapy. However, all data for the current study were collected prior to any intervention.

Results

Expressed emotion and affective style

The main aim of this study was to examine the relationship between emotional attitudes expressed about a patient to a neutral interviewer and direct emotional communication with that patient. It was hypothesised that high-EE relatives would be more emotionally negative than low-EE relatives—critical, intrusive, or both—when face-to-face with the patient. Table I shows the number of different affective style codes, as well as the total number of negative codes, used in ten minutes of interaction. For each analysis a two-tailed *t*-test was used. Variances were pooled unless they were significantly different, in which case a separate variance estimate was used.

TABLE I
Means and standard deviations for high and low-EE interactions: affective style scores and speech rates

Affective style	*Low EE*		*High EE*	
	Mean	*s.d.*	*Mean*	*s.d.*
Criticism	0.86	1.86	5.00	5.21
Neutral intrusions	3.86	3.76	6.26	4.95
Total negative AS	4.71	5.47	11.26	7.71
Support	2.71	3.55	0.65	1.15
Relative speech rate	43.0	20.9	70.8	35.0
Patient speech rate	22.0	12.8	35.7	19.5
Total speech rate	65.0	27.0	106.5	46.7
Speech turnovers	72.0	45.3	94.5	44.2

High-EE relatives expressed significantly more negative AS statements in total than low-EE relatives ($n=30$, $t=2.08$, $P<0.05$). Breaking down the negative AS total score into criticisms and intrusions, high-EE relatives made significantly more criticisms than low-EE relatives ($n=30$, $t=3.20$, $P<0.003$). This was so regardless of whether the low frequency harsh criticisms were included in the toal score. There was a trend for high-EE relatives to make more neutrally intrusive statements and fewer supportive statements, but neither trend reached statistical significance.

Expressed emotion and speech patterns

The relationship between EE and speech patterns during the interaction was examined. The number of words used by relatives during the ten minutes of interaction was measured from the number of lines on the verbatim transcript. High-EE relatives used a significantly greater number of words (65% more) than low-EE relatives ($n=30$, $t=1.98$, $P<0.05$) (Table I). This could be due to a generally more heated interaction, or to the high-EE relative being more dominant and lecturing. Therefore, the number of words used by the patient was added into the analysis. A two-way analysis of variance was conducted with EE (high or low) as one factor and relationship (relative or patient) as the other (this factor was correlated because patient and relative were in the same interaction). There were significant effects of EE ($F=4.94$, d.f. = 1,28, $P<0.03$) and of relationship ($F=18.57$, d.f. = 1,28, $P<0.0002$), but the interaction was not significant. Relatives thus use significantly more words than patients (twice as many), and the total number of lines used in interactions which included high-EE relatives was significantly greater (64% more) than for low-EE relatives. Since all conversations were exactly ten minutes long, it can be concluded that the average rate of speech was significantly greater over the course of the conversation. Patients tended to use more words speaking to high-EE relatives than to low-EE relatives (62% more), the difference being comparable to that found between high and low-EE relatives. Furthermore, there was a significant and positive correlation between the relatives' word count and the patient's word count (Pearson's $r=0.47$, $P<0.004$). Interaction with a high-EE relative is thus characterised by high verbal activity on the part of both relative and patient.

To investigate the length of individual speeches, a count was also made of the number of turnovers (i.e. changes from one speaker to another) during the ten minutes. Although the mean for high-EE interactions was 31% larger, the difference was not significant. This suggests that high-EE interactions were not characterised by longer speeches, but had at least as many changes of speaker as low-EE interactions.

EE sub-categories and affective style

A second aim of this study was to examine how different

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TABLE II
Mean AS scores for low-EE and high-EE subgroups of relatives

Affective Style	*Low EE*	*Critical*	*EOI*	*Critical and EOI*
Criticism				
Mean	0.86	6.14	2.40	4.75
s.d.	1.86	5.79	1.52	6.18
Neutral intrusions				
Mean	3.86	5.57	6.20	8.75
s.d.	3.76	4.72	4.97	6.07

kinds of high-EE attitudes (criticism and EOI) would be expressed in direct interactional behaviour with the patient. It was hypothesised that a critical attitude would be seen as direct criticism of the patient and an emotionally over-involved attitude would correlate with neutral intrusions in the interaction. To examine this, an analysis of variance (ANOVA) was performed on the four sub-categories of EE: low, high on critical comments only, high on EOI only, and high on both EOI and critical comments.

It was found, as expected, that differences among the three high-EE sub-groups would not be significant for total AS, support, and rate of speech. Thus, all three high-EE sub-groups of relatives were consistently higher than low-EE relatives on total AS and rate of speech. Previous analysis had shown no mean differences between high and low-EE relatives on weekly face-to-face contact. However, there were found to be significant differences between sub-groups ($n=30$, d.f. $=3$, $F=2.96$, $P<0.05$), with the pure high-EOI relatives spending far more time (61 hours) with the patients than other kinds of relatives (26 hours).

As predicted, when the negative AS codes were broken down into their components of criticisms and neutrally intrusive statements, a more complex pattern emerged (Table II). All relatives who scored highly on CC (i.e. the high-EE critical and the high-EE critical + EOI subgoups combined) were compared in planned contrasts (on the basis of Miklowitz *et al*, 1984) with the other two subgroups. The combined high-CC group made significantly more criticisms in direct interaction than both the low-EE group ($n=25$, $t=3.27$, $P<0.01$) and the purely high-EOI group ($n=23$, $t=2.27$, $P<0.05$).

Similarly, for the analysis of neutrally intrusive statements, the combined high-EOI groups were compared in planned contrasts with the other two sub-groups. The combined high-EOI group did not make significantly more neutral intrusions than the low-EE group ($n=16$, $F=2.25$, NS) or the purely high-CC group ($n=23$, $F=0.87$, NS), although the pattern of means was as expected.

The pattern of means for criticisms and intrusive statements in this British sample (Fig. 1) closely follows that seen in the American sample reported by Miklowitz *et al* (1984), and replicates their findings.

However, although the findings for total criticisms are quite clear-cut, the pattern of means for neutrally-intrusive statements is not so clear. Specifically, the mean number of neutral intrusions made by the high-EE critical subgroup is about the same as the mean number made by the high-EE EOI subgroup. In order to assess what this means about the way critical attitudes are displayed in direct interaction, correlational and case-by-case profile analyses were performed.

Firstly, the correlation between the number of critical statements and the number of neutrally intrusive statements was not significant ($n=30$, Pearson's $r=0.20$, NS). Secondly, the correlation between EOI (scored dichotomously as high or low) and neutral intrusions was marginally significant ($n=30$, Pearson's $r=0.24$, $P<0.10$) as predicted, whereas the correlation with total criticisms was not. However, the correlations between critical attitudes shown in the CFI interview and critical comments and neutral intrusions in direct interaction were both significant (criticism: $r=0.32$, $P<0.05$; neutral intrusions: $r=0.31$; $n=30$, $P<0.05$). This suggests that critical attitudes may be displayed in direct interaction as both criticism and intrusive statements, whereas emotional over-involvement may be displayed as neutral intrusions only.

This hypothesis is confirmed by case-by-case analyses, using the profile analysis described under 'Method'. Six of the seven low-EE relatives had good AS profiles, and 18 of the 23 high-EE relatives had critical or intrusive profiles—a highly significant difference (Fisher's exact $P<0.004$). Examining these data in greater detail, there is a significant overall skew in the data ($\chi^2=19.5$, d.f. $=9$, $P<0.05$), because relatives who are EOI in attitude (regardless of whether they are also critical) tend to be intrusive in interaction (six out of nine), and the majority of relatives who are critical in attitude tend to be either critical in behaviour or critical and intrusive in behaviour (8 out of 14).

Analysis of means, correlations, and case-by-case profiles therefore point to the same conclusion: that emotionally over-involved relatives display neutrally intrusive statements in face-to-face interactions, whereas critical relatives display both criticisms and intrusions.

Patient measures and EE

To determine whether the differences in relatives' attitudes towards the patient are related to differences in the

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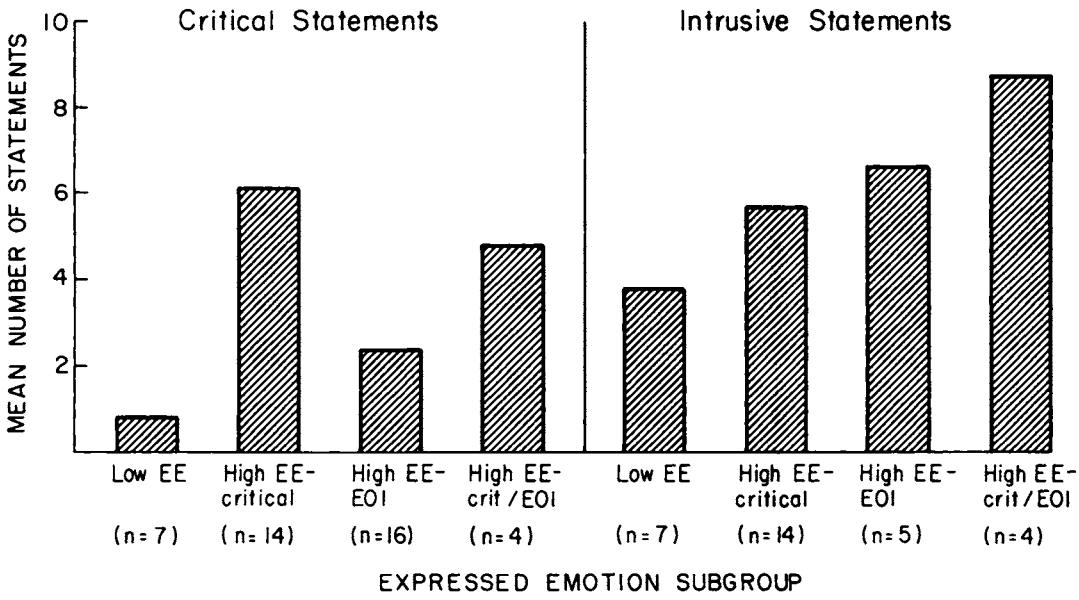

FIG. 1. Mean number of critical and intrusive statements made by relatives of schizophrenics with various EE attitudes

patient, we examined the relationship between relatives' EE and measures of premorbid socio-sexual functioning, medication levels and psychiatric state at intake.

The UCLA Social Attainment Survey was used as a measure of social-sexual competence prior to the onset of symptoms. Scores for patients from pure high-EE families were compared with those of patients from low and mixed-EE families. There were no significant differences, using either raw scores or the sex-specific criteria for defining good and poor premorbid status (Goldstein, 1978). There were also no significant differences in medication levels at the time of the PSE or at the direct interaction.

The PSE symptoms were grouped into the 38 CATEGO syndrome clusters (Wing *et al*, 1974). A syndrome was considered present when the patient received a positive rating (1 or 2) on any symptom which was part of the cluster. The presence or absence of syndromes was examined in relation to the family EE status, comparing high-EE families with low and mixed-EE families combined. There were no significant differences in the proportion of patients who had any one syndrome present, but there were trends for syndromes related to depression. The four syndromes related to depression were therefore examined: depressive delusions and hallucinations, simple depression, special features of depression, and other symptoms of depression. It was found that only two out of the seven patients from the low or mixed-EE families had more than one syndrome of depression, whereas 11 out of the 15 patients from high-EE families had more than one syndrome of depression. This was a significant difference (Fisher's exact $P=0.05$). Furthermore, the presence of irritability was related to depression ($P<0.05$), although it did not reach significance in relation to EE. These data may reflect a greater emotional reactivity to high-EE relatives in recent-onset schizophrenic patients, or stronger emotional responses by relatives to patients with a depressive aspect to their condition.

Family type

To investigate whether parents behaved differently from spouses, two-way ANOVAs were performed with family type as one factor, level of EE as the other, and EE and AS scales as dependent variables. The only significant differences were for spouses to show greater warmth in their attitude to relatives ($n=30$, d.f.$=1$, $F=7.71$, $P<0.01$) and more face-to-face contact ($n=30$, d.f.$=1$, $F=4.09$, $P<0.05$). There were no significant interactions, and thus it can be concluded that the relationship between emotional attitudes and behaviour is consistent across family types.

Discussion

This study examined how relatives of schizophrenics display EE attitudes in direct interaction with patients in a dyadic situation without the confounding presence of other relatives or clinicians. During a ten minute behavioural sample of dyadic communication between relative and patient about a conflictual issue, high-EE relatives were more affectively negative than low-EE relatives, being more critical, guilt-inducing, or intrusive. Such a negative emotional family climate is likely to be stressful, and appears to increase the risk of the development of schizophrenia-spectrum

disorders (Doane *et al*, 1981; Goldstein, 1985) as well as the risk of a relapse in someone recovering from an episode of schizophrenia (Doane *et al*, 1985; Vaughn & Leff, 1976*a*; Vaughn *et al*, 1984). Furthermore, changes in the affective climate of the family may decrease the risk of a relapse, as several recent family intervention studies have suggested (Strachan, 1985; in press).

Relatives who had EOI attitudes tended to be intrusive when face-to-face with the patient, either by making an excessive number of statements implying knowledge of what was going on in the patient's mind, or by making one or more guilt-inducing statements which blamed the patient for causing problems to the relative and implied that the patient had malicious or at least uncaring intentions. The picture was more complicated for relatives with highly critical attitudes. They were clearly more critical when face-to-face with the patient, by making either an excessive number of relatively benign criticisms or one or more statements which were harshly critical and attacked the character of the patient. However, it also appeared that relatives with a critical attitude were more intrusive as well. That high-EE critical and high-EE EOI relatives both use neutral intrusions in direct interaction raises the question as to whether the neutral intrusions used by high-EE critical relatives are different in type and impact from neutral intrusions used by high-EE EOI relatives or low-EE relatives. Research into this question is in progress.

Overall, these data closely parallel the pattern of findings of the connection between EE and interactional behaviour described by Miklowitz *et al* (1984), despite several differences in procedure and analysis between the two studies: we examined ten minutes of dyadic discussion without adjustment for line-length, whereas Miklowitz examined longer triadic discussions but adjusted them to control for word length. There is thus a comparability between intrafamilial behaviours in the UK and the USA, suggesting that family mechanisms mediating EE are comparable in the two countries.

A special aspect of the sample was that it was composed of recently admitted schizophrenics. Although most had suffered a recent onset of their symptoms, two patients had had longer-standing delusions. To assess whether these data were representative of a recent-onset sample, the main analyses were repeated excluding these two patients. Essentially similar results were obtained. Since the Miklowitz data were obtained from a more chronic population, this data thus appears to suggest that EE–AS relationships in a recent onset sample are similar to relationships in a more chronic sample.

It is important to note that while EE relates to the AS measure of interactional behaviour, the two measures are not identical in meaning. The EE measure taps emotional attitudes of the relative, whereas the AS measure taps direct interactional behaviour. The EOI measure in particular takes account of over-protective behaviour and excessive self-sacrifice, both of which are long term aspects of relatives' behaviour. That intrusiveness is associated with EOI does not mean they are identical, but the two are consistent in that intrusive remarks involve speaking for the patient, or making assumptions about his or her inner state.

Another important finding was that in high-EE pairs both relatives and patients used more words than was the case in low-EE pairs. Thus, in high-EE dyads, both participants are actively involved in the interaction, contradicting the thesis that high-EE relatives are dominant and the patients submissive. These data also argue against the idea that a negative affective style is merely a result of the high-EE relative being more dominant and speaking a higher proportion of time, thus producing more criticisms and intrusions. Furthermore, these data contradict the idea that a higher rate of negative behaviour is an artifact of word count: although high-EE relatives used 65% more words than low-EE relatives, they used more than twice as many intrusions and criticisms. It should be noted, however, that this pattern may change over the years if the patient becomes more chronic and withdrawn.

These findings relate to the study by Kuipers *et al* (1983), who observed relatives and patients talking to an interviewer, and found that high-EE relatives spent 57% more time talking than low-EE relatives—a figure close to the 64% higher word count observed here. They also found that the amount of silence was significantly greater in low-EE pairs than in high-EE pairs. They did not find that differences in the patients' behaviour were related to EE, but this may have been because an interviewer was present—this could inhibit the development of a reciprocal interaction pattern between the other two.

Do low-EE relatives show more support than high-EE relatives? The above studies showed no differences, but this may have been because the discussions were emotionally charged, thus eliciting critical and intrusive statements. There is evidence that with more neutral issues, low-EE relatives show more positive behaviours such as approval, agreement, smiling and humour (Greenwald *et al*, cited in Strachan *et al*, 1986).

Together, these studies suggest that interactions with high-EE relatives can be characterised as lively and heated, with a great deal of excitability, criti-

cisms, intrusiveness, interruptions, and simultaneous speech. Low-EE interaction can be characterised as calmer, more affectively neutral, more positive and supportive, and less verbal, with more pauses.

These findings also pose intriguing questions about patients' responses to, or provocation of, the criticisms and intrusions of the high-EE relative. Is the patient's style of coping one of counter-attack, withdrawal, or more differentiated expressions of autonomy? Are there repeated patterns of patients' behaviour which precede relatives' criticisms or intrusions? While the present study did not examine such issues, the word counts suggest that patients are actively involved in interactions with high-EE relatives, rather than being withdrawn.

The finding that patients with high-EE relatives reported more depression and irritability suggests hypotheses about the cyclical nature of the interaction. For example, Vaughn (1986) reported that the majority of critical comments are about long-standing attributes of the patient, rather than about recent changes in behaviour. As the current study suggests, this criticism of characteristics of the patient is probably expressed over the years and may, if internalised by the patient, contribute to the depressive symptomatology. Alternatively, as Coyne (1976*a*,*b*) has argued, the behaviour of depressed individuals may elicit alternating messages of rejection and reassurance. It is possible that patients who make self-deprecating remarks or statements of hopelessness elicit or perpetuate relatives' criticism and intrusiveness.

Thus, both the expression of high-EE attitudes and the patients' depression and irritability may interact in a cyclical pattern. Further examination of patients' behaviour using sequential analyses could help to explain processes which might maintain and perpetuate a cycle of mutual antagonism or which might lead to a de-escalation of tensions. Such exploration might help to explain why, despite the general congruency between attitudes and behaviour shown in this study, there are discrepancies.

In conclusion, the establishment of a basic congruence between emotional attitudes and behaviour shown by these data in a British sample confirms the findings of Miklowitz and Valone in American samples. Taken together, the reports provide cross-national replications which parallel those of the relationship between EE and relapse in both Britain and the USA (Vaughn & Leff, 1976*a*; Vaughn *et al*, 1984), thus building a solid body of evidence on the nature of EE and suggesting that there are comparable behavioural mediating mechanisms in direct behaviour in the two countries.

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